

PATENT ABSTRACTS OF JAPAN

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(54) FANCY FODDER STOCK

(57)Abstract:

PURPOSE: To provide the title fodder stock excellent in flavor, intestinal disorder- controlling action, immunological function-activating action and growth- promoting effect, useful for livestock etc., comprising fermented milk and grape juice.

CONSTITUTION: The objective fodder stock comprising (A) 100 pts.wt. of fermented milk prepared by fermentation of e.g. animal milk with lactobacillus or its combination with yeast and (B) pref. 0.2-5 pts.wt. of grape juice. The present fodder stock is added pref. at 1-30wt.% to a feed such as artificial milk, formula feed or natural pasture.

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CLAIMS

[Claim(s)]

[Claim 1]A palatability feed raw material containing fermented milk and grape juice.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]About a palatability feed raw material, more particularly, to livestock animals, such as a baby pig or a pig which carried out anorexia, this invention shows the optimal palatability and relates to the palatability feed raw material which brings about improvement of the amount of feed intake, and also growth promotion especially.

[0002]

[Description of the Prior Art]In recent years, by the technical development in the zootechnics related field being remarkable, for example, paying synthetic milk to the baby pig of seven to 10 age in day of the post partum, and taking in feed at an early stage after that, physical strength recovery of a mother hog is brought forward, and the improvement in the economic effectuation by the early weaning of livestock animals, such as raising shipment efficiency, is measured. However, the change to synthetic diet from the mother's milk in this early weaning gives great stress to livestock animals, causes reduction of the amount of feed intake, diarrhea, the illness, etc., and has become causes, such as a temporary loss weight and health disturbance.

[0003]Then, in order to measure improvement of the amount of feed intake, addition of a flavor, adjustment of a feed moisture content, adjustment of feed shape, etc. are performed, for example, but the actual condition is that the effect does not have. [enough]

[0004]On the other hand, in order to improve improvement of the amount of feed intake further, the feed additives (JP,60-141232,A) which comprise fermented milk are proposed, but the effect may not be satisfied thoroughly, either and development of further outstanding feed is desired.

[0005]

[Problem(s) to be Solved by the Invention]Therefore, to the livestock animals at the time of

early weaning, etc., the purpose of this invention measures improvement of the amount of feed intake, and there is in providing the palatability feed raw material which can promote growth especially.

[0006]

[Means for Solving the Problem]According to this invention, a palatability feed raw material containing fermented milk and grape juice is provided.

[0007]This invention is explained still in detail below.

[0008]A palatability feed raw material of this invention contains fermented milk and grape juice as an indispensable ingredient.

[0009]For example the fermented milk used for this invention can carry out fermentation treatment of the beast milk with lactic acid bacteria or lactic acid bacteria, yeast, etc., and can prepare it, and this fermentation treatment can also be performed on a multi stage story. As said beast milk, as a dairy ingredient, beast milk etc. which are used can be mentioned and all the fat beast milk, such as a cow, a sheep, and a goat, degreasing beast milk, etc. can usually be used preferably. It is not what will be limited especially if growth under beast milk existence is possible for said lactic acid bacteria, For example, a streptococcus (Streptococcus) group, a PEDEOKOKKASU (Pediococcus) group, The Leuconostoc (Leuconostoc) group, the Lactobacillus (Lactobacillus) group, Can mention lactic acid bacteria belonging to a Bifidobacterium (Bifidobacterium) group etc., etc., and also specifically, As a sale-in-lots stock, easily For example, available *Lactobacillus bulgaricus* (*Lactobacillus delbrueckii* subsp.*bulgaricus*), *Lactobacillus helveticus* (*Lactobacillus helveticus*), *Lactobacillus acidophilus* (*Lactobacillus acidophilus*), *Streptococcus thermophilus* (*Streptococcus thermophilus*), *Streptococcus RAKUTISU* (*Streptococcus lactis*), *Leuconostoc SHITOROBORAMU* (*Leuconostoc citrovorum*), *Bifidobacterium bifidum* (*Bifidobacterium bifidum*), *Bifidobacterium longum* (*Bifidobacterium longum*) etc. can be mentioned, and when using it, it can be independent or can use as a mixed starter. Yeast etc. which can be increased can be mentioned by carrying out simultaneous fermentation as said yeast with yeast in which growth under beast milk existence is possible, or bottom lactic acid bacteria of beast milk existence. *Saccharomyces cerevisiae* which can specifically obtain a sale-in-lots stock easily, for example (*Saccharomyces cerevisiae*), *Candida YUTIRISU* (*Candida utilis*), *Kluyveromyces RAKUTISU* (*Kluyveromyces fragilis*), etc. can be mentioned, and when using it, it can be independent or can use as a mixture.

[0010]In order to manufacture said fermented milk, in being able to carry out in accordance with a publicly known method, for example, performing two-step fermentation, To beast milk 100 weight section, carry out 1-5 weight-section inoculation, and first a starter of lactic acid bacteria or lactic acid bacteria, and yeast as primary fermentation, After making it ferment in 25-45 °C for 16 to 48 hours preferably, if needed. It can obtain by adding 15 to 50% of the

weight, carrying out sugar-added [of the sugar, such as sucrose, grape sugar, or invert sugar,] to the whole sour milk preferably obtained by primary fermentation, and subsequently performing fermentation in 15-30 ** as secondary fermentation for 15 to 25 hours. In inoculating lactic acid bacteria and yeast independently and fermenting them, after inoculating lactic acid bacteria at the time of said primary fermentation and performing lactic acid fermentation, it can obtain by inoculating yeast at the time of said secondary fermentation, and carrying out symbiosis fermentation. Sugar-added [said] is for raising a starter's nutrient or the preservability of fermented milk acquired, and it is not necessary to necessarily add it. In order to raise this preservability, germicidal treatment of the obtained fermented milk can also be carried out.

[0011]Grape juice used for this invention, for example Campbell early (Cambell Early), Concord (Concord), muscat bailey A (Muscat Bailey A), Fred Nia (Fredonia), Delaware (Delaware), Niagara (Niagara), Portland (Port land), Raw material grapes, such as the neo ant cant (Neo Alicant), a publicly known manufacturing process, For example, 1 / 6 concentration grape juice which could be prepared and was usually condensed 6 times according to a publicly known concentration step, or commercial grape juice can also be used as it is by considering it as fruit juice according to washing, crash, heating, juice, ** pulp, stericooling, centrifugal separation, a filtering step, etc. As for especially a blending ratio of this 1 / 6 grape juice, it is preferred that it is the range of 0.2 to 5 weight section 0.1 to 20 weight section to said fermented milk 100 weight section. Since in besides said range desired palatability is hard to be acquired and an enhancement effect of the amount of feed intake falls, it is not desirable. Although a blending ratio of said grape juice showed 1 / 6 concentration grape juice which is usually used and which was condensed 6 times, The blending ratio of this grape juice should just blend about 6/5 quantity of concentration grape juice said 6 times, when it can be made to fluctuate-like proportionally according to the enrichment, for example, uses concentration grape juice 5 times.

[0012]In order to prepare a palatability feed raw material of this invention, it can obtain by mixing said fermented milk and grape juice. Under the present circumstances, although grape juice may carry out addition mixing during fermentation at the time of preparing fermented milk, it is preferred to carry out addition mixing after an end of fermentation economically.

[0013]Although a palatability feed raw material of this invention can be used as feed as it is, it is preferred to mix and use it for other economical for example, feed, such as synthetic milk, milk substitutes, publicly known assorted mixed feed, and natural grass. Thus, as for the amount of palatability feed raw material used of this invention in a case of mixing with other feed, it is preferred that it is 1 to 30% of the weight of a range to the whole feed. When the amount used is less than 1 % of the weight, since a desired effect is not expectable, it is not desirable.

[0014]

[Effect of the Invention] Since the palatability feed raw material of this invention has combined the flavor of fermented milk, and the flavor of grape juice, it can show the palatability outstanding to livestock animals as compared with the conventional feed raw material, and can promote the amount of feed intake. A diarrhea preventive effect, the prevention-of-a-disease effect, etc. can be acquired by the ready intestines operation by fermented milk, immune-function activation operation, etc. Therefore, the outstanding growth facilitatory effect is shown especially to the livestock animals of the weaning period and a growth period.

[0015]

[Example] Although an example explains this invention still in detail below, this invention is not limited to these.

[0016]

[Work example 1] The amount part of lactic starter (*Lactobacillus delbrueckii* subsp. *bulgaricus* ATCC-11842) duplex was inoculated into sterilization skim milk 100 weight section, 37 °C and 20-hour lactic acid fermentation were performed, and the sour milk of 1.5 % of the weight of lactic acid concentration was prepared. Subsequently, after inoculating the amount part of yeast starter (*Candida utilis* IFO-1086) duplex into the obtained sour milk, sucrose 45 weight section was added, and the nutrient of yeast was supplied, and also osmotic pressure was changed, and 25 °C was fermented for 20 hours. Addition mixing of the sucrose 61 weight section was carried out so that concentration grape juice (trade name "1 / 5 concentration grape juice", product made from Welch, Inc.) 2.1 weight section might be added 5 times after the end of fermentation and also it might become 50 % of the weight of sucrose concentration. After carrying out heat sterilization treatment of the obtained mixed liquor for 30 minutes at 80 °C, it cooled to the room temperature and the palatability feed raw material was prepared. Subsequently, addition mixing of the palatability feed raw material 167 obtained weight section was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 833 commercial weight section for breast-feeding term baby pigs, and examination feed was prepared. Both of contrast feed which consists only of obtained examination feed and breast-feeding term baby pig feed of said marketing was installed so that he could eat freely, and it fed for six days (2kg/day of each feed) with the cafeteria system at two sample offering baby pigs (average weight of 9.6 kg), and a residue and the intake which spilt and deducted quantity were measured. Under the present circumstances, the moisture content of examination feed and contrast feed presupposed that it is the same, and exchanged the 1-day by day setting position of examination feed and contrast feed. The result is shown in Table 1.

[0017]

[Comparative example 1] Palatability feed raw material 167 weight section obtained by

preparing a palatability feed raw material similarly in the examination feed of Example 1 except not carrying out addition mixing of the grape juice is made to be the same as that of Example 1, Addition mixing was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 833 commercial weight section for breast-feeding term baby pigs, and comparative study feed was prepared. About the obtained comparative study feed, intake was measured like Example 1. The result is shown in Table 1.

[0018]

[Table 1]

	対照飼料 A (g / 頭・日)	試験飼料 B (g / 頭・日)	B / A
実施例 1	28 ± 13	767 ± 13***	27.4
比較例 1	78 ± 57	605 ± 57***	7.8

*** P < 0.001

[0019] Compared with comparative study feed, the examination feed containing the palatability feed raw material of this invention had remarkable palatability, and there was much intake of a passage clear from the result of Table 1.

[0020]

[Work example 2] To sterilization skim milk 100 weight section. The mixed starter who consists of lactic starter (*Lactobacillus delbrueckii* subsp. *bulgaricus* ATCC-11842) and yeast starter (*Candida utilis* FO-1086) 3 weight section is inoculated, Primary fermentation was performed at 37 °C for 20 hours, and the sour milk of 1.5 % of the weight of lactic acid acidity was prepared. Subsequently, sucrose 45 weight section was added to the obtained sour milk, and the nutrient of yeast was supplied, and also osmotic pressure was changed, and secondary fermentation was performed at 25 °C for 20 hours. Addition mixing of the sucrose 60 weight section was carried out so that concentration grape juice (trade name "1 / 5 concentration grape juice", product made from Welch, Inc.) 2.1 weight section might be added 5 times after the end of fermentation and also it might become 50% of sucrose concentration. After carrying out heat sterilization treatment of the obtained mixed liquor for 30 minutes at 80 °C, it cooled to the room temperature and the palatability feed raw material was prepared. Subsequently, addition mixing of the palatability feed raw material 91 obtained weight section was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 909 commercial weight section for breast-feeding term baby pigs, and examination feed was prepared. Both of contrast feed which consists only of obtained examination feed and breast-feeding term baby pig feed of said marketing was installed so that he could eat freely, and it

fed for six days (1.5kg/(day)) with the cafeteria system at two sample offering baby pigs (average weight of 6.0 kg), and a residue and the intake which spilt and deducted quantity were measured. Under the present circumstances, the moisture content of examination feed and contrast feed presupposed that it is the same, and exchanged the 1-day by day setting position of examination feed and contrast feed. The result is shown in Table 2.

[0021]

[Comparative example 2] Palatability feed raw material 91 weight section obtained by preparing a palatability feed raw material similarly in the examination feed of Example 2 except not carrying out addition mixing of the grape juice is made to be the same as that of Example 1, Addition mixing was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 909 commercial weight section for breast-feeding term baby pigs, and comparative study feed was prepared. About the obtained comparative study feed, intake was measured like Example 2. The result is shown in Table 2.

[0022]

[Table 2]

	対照飼料 A (g / 頭・日)	試験飼料 B (g / 頭・日)	B / A
実施例 2	70 ± 37	392 ± 41***	5.6
比較例 2	148 ± 114	288 ± 85*	1.9

* $P < 0.05$, *** $P < 0.001$

[0023] Compared with comparative study feed, the examination feed containing the palatability feed raw material of this invention had remarkable palatability, and there was much intake of a passage clear from the result of Table 2.

[0024]

[Comparative example 3] 5 times, addition mixing of the concentration grape juice (trade name "1 / 5 concentration grape juice", product made from Welch, Inc.) 2.5 weight section was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 997.5 commercial weight section for breast-feeding term baby pigs, and comparative study feed was prepared. Both of contrast feed which consists only of obtained comparative study feed and breast-feeding term baby pig feed of said marketing was installed so that he could eat freely, and it fed for two days (1kg/(day)) with the cafeteria system at two sample offering baby pigs (average weight of 6.2 kg), and a residue and the intake which spilt and deducted quantity were measured. Under the present circumstances, the moisture content of comparative study feed and contrast feed presupposed that it is the same, and exchanged the

1-day by day setting position of comparative study feed and contrast feed. As a result, the intake of comparative study feed is 167 ± 10 g/animal and, and a day.

The intake of contrast feed was 119 ± 12 g/animal and, and a day.

Under the present circumstances (comparative study feed / contrast feed), it was ≈ 1.4 . As a result, it turned out that the palatability of the comparative study feed containing only the grape juice which does not contain fermented milk is not remarkable as compared with contrast feed.

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TECHNICAL FIELD

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PRIOR ART

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[0003]Then, in order to measure improvement of the amount of feed intake, addition of a flavor, adjustment of a feed moisture content, adjustment of feed shape, etc. are performed, for example, but the actual condition is that the effect does not have. [enough]

[0004]On the other hand, in order to improve improvement of the amount of feed intake further, the feed additives (JP,60-141232,A) which comprise fermented milk are proposed, but the effect may not be satisfied thoroughly, either and development of further outstanding feed is desired.

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EFFECT OF THE INVENTION

[Effect of the Invention]Since the palatability feed raw material of this invention has combined the flavor of fermented milk, and the flavor of grape juice, it can show the palatability outstanding to livestock animals as compared with the conventional feed raw material, and can promote the amount of feed intake. A diarrhea preventive effect, the prevention-of-a-disease effect, etc. can be acquired by the ready intestines operation by fermented milk, immune-function activation operation, etc. Therefore, the outstanding growth facilitatory effect is shown especially to the livestock animals of the weaning period and a growth period.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]Therefore, to the livestock animals at the time of early weaning, etc., the purpose of this invention measures improvement of the amount of feed intake, and there is in providing the palatability feed raw material which can promote growth especially.

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MEANS

[Means for Solving the Problem]According to this invention, a palatability feed raw material containing fermented milk and grape juice is provided.

[0007]This invention is explained still in detail below.

[0008]A palatability feed raw material of this invention contains fermented milk and grape juice as an indispensable ingredient.

[0009]For example the fermented milk used for this invention can carry out fermentation treatment of the beast milk with lactic acid bacteria or lactic acid bacteria, yeast, etc., and can prepare it, and this fermentation treatment can also be performed on a multi stage story. As said beast milk, as a dairy ingredient, beast milk etc. which are used can be mentioned and all the fat beast milk, such as a cow, a sheep, and a goat, degreasing beast milk, etc. can usually be used preferably. It is not what will be limited especially if growth under beast milk existence is possible for said lactic acid bacteria, For example, a streptococcus (Streptococcus) group, a PEDEOKOKKASU (Pediococcus) group, The Leuconostoc (Leuconostoc) group, the Lactobacillus (Lactobacillus) group, Can mention lactic acid bacteria belonging to a Bifidobacterium (Bifidobacterium) group etc., etc., and also specifically, As a sale-in-lots stock, easily For example, available *Lactobacillus bulgaricus* (*Lactobacillus delbrueckii* subsp.*bulgaricus*), *Lactobacillus helveticus* (*Lactobacillus helveticus*), *Lactobacillus acidophilus* (*Lactobacillus acidophilus*), *Streptococcus thermophilus* (*Streptococcus thermophilus*), *Streptococcus RAKUTISU* (*Streptococcus lactis*), *Leuconostoc SHITOROBORAMU* (*Leuconostoc citrovorum*), *Bifidobacterium bifidum* (*Bifidobacterium bifidum*), *Bifidobacterium longum* (*Bifidobacterium longum*) etc. can be mentioned, and when using it, it can be independent or can use as a mixed starter. Yeast etc. which can be increased can be mentioned by carrying out simultaneous fermentation as said yeast with yeast in which growth under beast milk existence is possible, or bottom lactic acid bacteria of beast milk existence. *Saccharomyces cerevisiae* which can specifically obtain a sale-in-lots stock easily, for example (*Saccharomyces*

cerevisae), Candida YUTIRISU (Candida utilis), Kluyveromyces RAKUTISU (Klyv-eromyces Isctis), etc. can be mentioned, and when using it, it can be independent or can use as a mixture.

[0010] In order to manufacture said fermented milk, in being able to carry out in accordance with a publicly known method, for example, performing two-step fermentation, To beast milk 100 weight section, carry out 1-5 weight-section inoculation, and first a starter of lactic acid bacteria or lactic acid bacteria, and yeast as primary fermentation, After making it ferment in 25-45 ** for 16 to 48 hours preferably, if needed. It can obtain by adding 15 to 50% of the weight, carrying out sugar-added [of the sugar, such as sucrose, grape sugar, or invert sugar,] to the whole sour milk preferably obtained by primary fermentation, and subsequently performing fermentation in 15-30 ** as secondary fermentation for 15 to 25 hours. In inoculating lactic acid bacteria and yeast independently and fermenting them, after inoculating lactic acid bacteria at the time of said primary fermentation and performing lactic acid fermentation, it can obtain by inoculating yeast at the time of said secondary fermentation, and carrying out symbiosis fermentation. Sugar-added [said] is for raising a starter's nutrient or the preservability of fermented milk acquired, and it is not necessary to necessarily add it. In order to raise this preservability, germicidal treatment of the obtained fermented milk can also be carried out.

[0011] Grape juice used for this invention, for example Campbell early (Cambell Early), Concord (Concord), muscat bailey A (Muscat Bailey A), Fred Nia (Fredonia), Delaware (Delaware), Niagara (Niagara), Portland (Port land), Raw material grapes, such as the neo ant cant (Neo Alicant), a publicly known manufacturing process, For example, 1 / 6 concentration grape juice which could be prepared and was usually condensed 6 times according to a publicly known concentration step, or commercial grape juice can also be used as it is by considering it as fruit juice according to washing, crash, heating, juice, ** pulp, stericooling, centrifugal separation, a filtering step, etc. As for especially a blending ratio of this 1 / 6 grape juice, it is preferred that it is the range of 0.2 to 5 weight section 0.1 to 20 weight section to said fermented milk 100 weight section. Since in besides said range desired palatability is hard to be acquired and an enhancement effect of the amount of feed intake falls, it is not desirable. Although a blending ratio of said grape juice showed 1 / 6 concentration grape juice which is usually used and which was condensed 6 times, The blending ratio of this grape juice should just blend about 6/5 quantity of concentration grape juice said 6 times, when it can be made to fluctuate-like proportionally according to the enrichment, for example, uses concentration grape juice 5 times.

[0012] In order to prepare a palatability feed raw material of this invention, it can obtain by mixing said fermented milk and grape juice. Under the present circumstances, although grape juice may carry out addition mixing during fermentation at the time of preparing fermented milk,

it is preferred to carry out addition mixing after an end of fermentation economically.

[0013]Although a palatability feed raw material of this invention can be used as feed as it is, it is preferred to mix and use it for other economical for example, feed, such as synthetic milk, milk substitutes, publicly known assorted mixed feed, and natural grass. Thus, as for the amount of palatability feed raw material used of this invention in a case of mixing with other feed, it is preferred that it is 1 to 30% of the weight of a range to the whole feed. When the amount used is less than 1 % of the weight, since a desired effect is not expectable, it is not desirable.

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EXAMPLE

[Example] Although an example explains this invention still in detail below, this invention is not limited to these.

[0016]

[Work example 1] The amount part of lactic starter (*Lactobacillus delbrueckii* subsp. *bulgaricus* ATCC-11842) duplex was inoculated into sterilization skim milk 100 weight section, 37 ** and 20-hour lactic acid fermentation were performed, and the sour milk of 1.5 % of the weight of lactic acid concentration ** was prepared. Subsequently, after inoculating the amount part of yeast starter (*Candida utilis* IFO-1086) duplex into the obtained sour milk, sucrose 45 weight section was added, and the nutrient of yeast was supplied, and also osmotic pressure was changed, and 25 ** was fermented for 20 hours. Addition mixing of the sucrose 61 weight section was carried out so that concentration grape juice (trade name "1 / 5 concentration grape juice", product made from Welch, Inc.) 2.1 weight section might be added 5 times after the end of fermentation and also it might become 50 % of the weight of sucrose concentration. After carrying out heat sterilization treatment of the obtained mixed liquor for 30 minutes at 80 **, it cooled to the room temperature and the palatability feed raw material was prepared. Subsequently, addition mixing of the palatability feed raw material 167 obtained weight section was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 833 commercial weight section for breast-feeding term baby pigs, and examination feed was prepared. Both of contrast feed which consists only of obtained examination feed and breast-feeding term baby pig feed of said marketing was installed so that he could eat freely, and it fed for six days (2kg/day of each feed) with the cafeteria system at two sample offering baby pigs (average weight of 9.6 kg), and a residue and the intake which spilt and deducted quantity were measured. Under the present circumstances, the moisture content of examination feed and contrast feed presupposed that it is the same, and exchanged the 1-day by day setting position of examination feed and contrast feed. The result is shown in

Table 1.

[0017]

[Comparative example 1] Palatability feed raw material 167 weight section obtained by preparing a palatability feed raw material similarly in the examination feed of Example 1 except not carrying out addition mixing of the grape juice is made to be the same as that of Example 1, Addition mixing was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 833 commercial weight section for breast-feeding term baby pigs, and comparative study feed was prepared. About the obtained comparative study feed, intake was measured like Example 1. The result is shown in Table 1.

[0018]

[Table 1]

	対照飼料 A (g / 頭・日)	試験飼料 B (g / 頭・日)	B / A
実施例 1	28 ± 13	767 ± 13***	27.4
比較例 1	78 ± 57	605 ± 57***	7.8

*** P < 0.001

[0019] Compared with comparative study feed, the examination feed containing the palatability feed raw material of this invention had remarkable palatability, and there was much intake of a passage clear from the result of Table 1.

[0020]

[Work example 2] To sterilization skim milk 100 weight section. The mixed starter who consists of lactic starter (*Lactobacillus delbrueckii* subsp. *bulgaricus* ATCC-11842) and yeast starter (*Candida utilis* FO-1086) 3 weight section is inoculated, Primary fermentation was performed at 37 °C for 20 hours, and the sour milk of 1.5 % of the weight of lactic acid acidity was prepared. Subsequently, sucrose 45 weight section was added to the obtained sour milk, and the nutrient of yeast was supplied, and also osmotic pressure was changed, and secondary fermentation was performed at 25 °C for 20 hours. Addition mixing of the sucrose 60 weight section was carried out so that concentration grape juice (trade name "1 / 5 concentration grape juice", product made from Welch, Inc.) 2.1 weight section might be added 5 times after the end of fermentation and also it might become 50% of sucrose concentration. After carrying out heat sterilization treatment of the obtained mixed liquor for 30 minutes at 80 °C, it cooled to the room temperature and the palatability feed raw material was prepared. Subsequently, addition mixing of the palatability feed raw material 91 obtained weight section was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 909

commercial weight section for breast-feeding term baby pigs, and examination feed was prepared. Both of contrast feed which consists only of obtained examination feed and breast-feeding term baby pig feed of said marketing was installed so that he could eat freely, and it fed for six days (1.5kg/(day)) with the cafeteria system at two sample offering baby pigs (average weight of 6.0 kg), and a residue and the intake which spilt and deducted quantity were measured. Under the present circumstances, the moisture content of examination feed and contrast feed presupposed that it is the same, and exchanged the 1-day by day setting position of examination feed and contrast feed. The result is shown in Table 2.

[0021]

[Comparative example 2] Palatability feed raw material 91 weight section obtained by preparing a palatability feed raw material similarly in the examination feed of Example 2 except not carrying out addition mixing of the grape juice is made to be the same as that of Example 1, Addition mixing was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 909 commercial weight section for breast-feeding term baby pigs, and comparative study feed was prepared. About the obtained comparative study feed, intake was measured like Example 2. The result is shown in Table 2.

[0022]

[Table 2]

	対照飼料 A (g / 頭・日)	試験飼料 B (g / 頭・日)	B / A
実施例 2	70 ± 37	392 ± 41***	5.6
比較例 2	148 ± 114	288 ± 85*	1.9

* P < 0.05, *** P < 0.001

[0023] Compared with comparative study feed, the examination feed containing the palatability feed raw material of this invention had remarkable palatability, and there was much intake of a passage clear from the result of Table 2.

[0024]

[Comparative example 3] 5 times, addition mixing of the concentration grape juice (trade name "1 / 5 concentration grape juice", product made from Welch, Inc.) 2.5 weight section was carried out at feed (made in trade name "super pig milk *****", Inc. science feed research institute) 997.5 commercial weight section for breast-feeding term baby pigs, and comparative study feed was prepared. Both of contrast feed which consists only of obtained comparative study feed and breast-feeding term baby pig feed of said marketing was installed so that he could eat freely, and it fed for two days (1kg/(day)) with the cafeteria system at two sample

offering baby pigs (average weight of 6.2 kg), and a residue and the intake which spilt and deducted quantity were measured. Under the present circumstances, the moisture content of comparative study feed and contrast feed presupposed that it is the same, and exchanged the 1-day by day setting position of comparative study feed and contrast feed. As a result, the intake of comparative study feed is 167 ± 10 g/animal and, and a day.

The intake of contrast feed was 119 ± 12 g/animal and, and a day.

Under the present circumstances (comparative study feed / contrast feed), it was ≈ 1.4 . As a result, it turned out that the palatability of the comparative study feed containing only the grape juice which does not contain fermented milk is not remarkable as compared with contrast feed.

[Translation done.]

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(54)【発明の名称】 嗜好性飼料原料

(57)【要約】

【構成】 発酵乳及びブドウ果汁を含有することを特徴とする嗜好性飼料原料。

【効果】 本発明の嗜好性飼料原料は、発酵乳の風味とブドウ果汁の香味とを組合せているので、従来の飼料原料に比して、家畜動物に対して優れた嗜好性を示し、飼料摂取量を増進させることができる。また、発酵乳による整腸作用、免疫機能賦活作用等により、下痢防止効果、疾病予防効果等を得ることができる。従って、特に離乳期及び成長期の家畜動物に対して、優れた発育促進効果を示す。

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【特許請求の範囲】

【請求項1】 発酵乳及びブドウ果汁を含有することを特徴とする嗜好性飼料原料。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、嗜好性飼料原料に関し、更に詳細には、特に子豚又は食欲低下した豚等の家畜動物に対して、最適な嗜好性を示し、飼料摂取量の増進、更には成長促進をもたらす嗜好性飼料原料に関する。

【0002】

【従来の技術】近年、畜産関連分野における技術的発展は目覚ましく、例えば分娩後の7～10日令の子豚に対して人工乳を給与し、その後早期に飼料を摂取することによって、母豚の体力回復を早め、出荷効率を上昇させる等、家畜動物の早期離乳による経済効率の向上が計られている。しかしながら、該早期離乳における母乳から人工飼料への切替は、家畜動物に対して多大なストレスを与え、飼料摂取量の減少、下痢、疾病等を引き起こし、一時的な体重減少及び健康障害等の原因となっている。

【0003】そこで、飼料摂取量の増進を計るために、例えばフレーバーの添加、飼料水分含量の調整、飼料形状の調整等が行なわれているが、その効果は十分でないのが実状である。

【0004】一方、飼料摂取量の増進を更に改善するために、発酵乳から成る飼料添加剤（特開昭60-141232号公報）が提案されているが、その効果も完全に満足し得るものではなく、更に優れた飼料の開発が望まれている。

【0005】

【発明が解決しようとする課題】従って、本発明の目的は、特に早期離乳時等の家畜動物に対して、飼料摂取量の増進を計り、発育を促進させることができる嗜好性飼料原料を提供することにある。

【0006】

【課題を解決するための手段】本発明によれば、発酵乳及びブドウ果汁を含有することを特徴とする嗜好性飼料原料が提供される。

【0007】以下本発明を更に詳細に説明する。

【0008】本発明の嗜好性飼料原料は、発酵乳及びブドウ果汁を必須の成分として含有する。

【0009】本発明に用いる発酵乳は、例えば獣乳を乳酸菌又は乳酸菌及び酵母等により発酵処理して調製することができ、該発酵処理は、多段階で行うこともできる。前記獣乳としては、通常乳製品原料として用いられる獣乳等を挙げることができ、好ましくは牛、羊、山羊等の全脂獣乳、脱脂獣乳等を使用することができる。また前記乳酸菌は、獣乳存在下増殖可能なものであれば特に限定されるものではなく、例えば、ストレプトコッカ

ス（*Streptococcus*）属、ペデオコッカス（*Pedococcus*）属、ロイコノストック（*Leuconostoc*）属、ラクトバチルス（*Lactobacillus*）属、ビフィドバクテリウム（*Bifidobacterium*）属等に関する乳酸菌等を挙げることができ、更に具体的には、例えば分譲株として容易に入手可能な、ラクトバチルス・ブルガリカス（*Lactobacillus delbrueckii subsp. bulgaricus*）、ラクトバチルス・ヘルベチカス（*Lactobacillus helveticus*）、ラクトバチルス・アシドフィラス（*Lactobacillus acidophilus*）、ストレプトコッカス・サーモフィラス（*Streptococcus thermophilus*）、ストレプトコッカス・ラクティス（*Streptococcus lactis*）、ロイコノストック・シトロボラム（*Leuconostoc citrovorum*）、ビフィドバクテリウム・ビフィダム（*Bifidobacterium bifidum*）、ビフィドバクテリウム・ロンガム（*Bifidobacterium longum*）等を挙げることができ、使用に際しては単独若しくは混合スターターとして用いることができる。また前記酵母としては、獣乳存在下増殖可能な酵母又は獣乳存在下乳酸菌と同時に発酵することにより増殖可能な酵母等を挙げることができ、更に具体的には、例えば分譲株を容易に入手することができる、サッカロミセス・セレビジエ（*Saccharomyces cerevisiae*）、キャンディダ・ユティリス（*Candida utilis*）、クリベロマイセス・ラクティス（*Kluyveromyces fragilis*）等を挙げることができ、使用に際しては単独若しくは混合物として用いることができる。

【0010】前記発酵乳を製造するには、公知の方法に従って行うことができ、例えば2段階発酵を行う場合には、獣乳100重量部に対して、乳酸菌又は乳酸菌と酵母とのスターターを1～5重量部接種し、まず1次発酵として、好ましくは25～45℃において16～48時間発酵させた後、必要に応じて、蔗糖、ブドウ糖又は転化糖等の糖を、好ましくは1次発酵により得られた酸乳全体に対して15～50重量%添加して加糖し、次いで2次発酵として、15～30℃において15～25時間発酵を行うことにより得ることができる。また乳酸菌と酵母とを別々に接種して発酵させる場合には、前記1次発酵時に乳酸菌を接種して乳酸発酵を行った後、前記2次発酵時に酵母を接種して共生発酵させることにより得ることができる。前記加糖は、スターターの栄養源又は得られる発酵乳の保存性を向上させるためのものであって、必ずしも添加する必要はない。また該保存性を向上させるために、得られた発酵乳を殺菌処理することもできる。

【0011】本発明に用いるブドウ果汁は、例えばキャンベルアーリー（Campbell Early）、コンコード（Concord）、マスカットベリーA（Muscat Bailey A）、フレッドニア（Fredonia）、デラウェア（Delaware）、ナイアガラ（Niagara）、ポートランド（Portland）、ネオアリカント（Neo Alicante）等の原料ブドウを、公知の製造工程、例えば洗浄、圧搾、加熱、搾汁、除パルプ、殺菌冷却、遠心

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分餾、濾過工程等に従って果汁とすることにより調製することができ、また公知の濃縮工程により通常は6倍濃縮した1/6濃縮ブドウ果汁又は市販のブドウ果汁をそのまま使用することもできる。該1/6ブドウ果汁の配合割合は、前記発酵乳100重量部に対して0.1~20重量部、特に0.2~5重量部の範囲であるのが好ましい。前記範囲外の場合には、所望の嗜好性が得られにくく、飼料摂取量の増進効果が低下するので好ましくない。前記ブドウ果汁の配合割合は、通常用いられる6倍濃縮した1/6濃縮ブドウ果汁について示したが、該ブドウ果汁の配合割合は、その濃縮度に応じて比例的に増減させることができ、例えば5倍濃縮ブドウ果汁を使用する場合、前記6倍濃縮ブドウ果汁の6/5程度の量を配合すれば良い。

【0012】本発明の嗜好性飼料原料を調製するには、前記発酵乳とブドウ果汁とを混合することにより得ることができる。この際ブドウ果汁は、発酵乳を調製する際の発酵中に添加混合しても良いが、経済的には発酵終了後に添加混合するのが好ましい。

【0013】本発明の嗜好性飼料原料は、そのまま飼料として用いることができるが、経済的には例えば人工乳、代用乳、公知の配合飼料、天然牧草等の他の飼料に混合して使用するのが好ましい。このように他の飼料と混合する場合の本発明の嗜好性飼料原料の使用量は、飼料全体に対して、1~30重量%の範囲であるのが好ましい。使用量が1重量%未満の場合には、所望の効果が期待できないので好ましくない。

【0014】

【発明の効果】本発明の嗜好性飼料原料は、発酵乳の風味とブドウ果汁の香味とを組合せているので、従来の飼料原料に比して、家畜動物に対して優れた嗜好性を示し、飼料摂取量を増進させることができる。また、発酵乳による整腸作用、免疫機能賦活作用等により、下痢防止効果、疾病予防効果等を得ることができる。従って、特に産乳期及び成長期の家畜動物に対して、優れた発育促進効果を示す。

【0015】

【実施例】以下本発明を実施例により更に詳細に説明す*

	対照飼料 A (g/頭・日)	試験飼料 B (g/頭・日)	B/A
実施例 1	28 ± 13	767 ± 13***	27.4
比較例 1	78 ± 57	605 ± 57***	7.8

*** P<0.001

【0019】表1の結果から明らかなとおり、比較試験飼料に比べて、本発明の嗜好性飼料原料を含む試験飼料は、嗜好性が顕著であり、摂取量が多かった。

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* 本発明はこれらに限定されるものではない。

【0016】

【実施例1】殺菌脱脂乳100重量部に、乳酸菌スターター(Lactobacillus delbrueckii subsp. bulgaricus ATC C-11842)2重量部を接種して、37℃、20時間乳酸発酵を行い、乳酸濃度1.5重量%のの酸乳を調製した。次いで得られた酸乳に酵母スターター(Candida utilis IFG-1086)2重量部を接種した後、蔗糖45重量部を添加して酵母の栄養源を供給し、更に浸透圧を変えて25℃、20時間発酵させた。発酵終了後、5倍濃縮ブドウ果汁(商品名「1/5濃縮ブドウ果汁」、ウエルチ株式会社製)2.1重量部を添加し、更に蔗糖濃度50重量%になるように、蔗糖61重量部を添加混合した。得られた混合液を80℃で30分間加熱殺菌処理した後、室温まで冷却し、嗜好性飼料原料を調製した。次いで得られた嗜好性飼料原料167重量部を、市販の哺乳期子豚用飼料(商品名「スーパービグミルクこなっ子」、株式会社科学飼料研究所製)833重量部に添加混合して試験飼料を調製した。得られた試験飼料と前記市販の哺乳期子豚飼料のみからなる対照飼料とを、両方自由に食べられるように設置し、供試子豚(平均体重9.6kg)2頭にカフエテリア方式で6日間(各飼料2kg/日)給餌して、残量及びこぼし量を差し引いた摂取量を測定した。この際、試験飼料と対照飼料との水分含有量は同一とし、また試験飼料と対照飼料との設置場所を1日ごと交換した。その結果を表1に示す。

【0017】

【比較例1】実施例1の試験飼料において、ブドウ果汁を添加混合しない以外は同様に嗜好性飼料原料を調製し、得られた嗜好性飼料原料167重量部を実施例1と同様に、市販の哺乳期子豚用飼料(商品名「スーパービグミルクこなっ子」、株式会社科学飼料研究所製)833重量部に添加混合して比較試験飼料を調製した。得られた比較試験飼料について、実施例1と同様に摂取量を測定した。その結果を表1に示す。

【0018】

【表1】

【0020】

【実施例2】殺菌脱脂乳100重量部に、乳酸菌スターター(Lactobacillus delbrueckii subsp. bulgaricus ATC

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C-11842)及び酵母スターター(Candida utilisIFO-1086) 3重量部からなる混合スターターを接種し、37℃で20時間、1次発酵を行い、乳酸酸度1.5重量%の酸乳を調製した。次いで得られた酸乳に蔗糖4.5重量部を添加して、酵母の栄養源を補給し、更に浸透圧を変えて、25℃で20時間2次発酵を行った。発酵終了後、5倍濃縮ブドウ果汁(商品名「1/5濃縮ブドウ果汁」、ウェルチ株式会社製)2.1重量部を添加し、更に蔗糖濃度5.0%になるように、蔗糖6.0重量部を添加混合した。得られた混合液を80℃で30分間加熱殺菌処理した後、室温まで冷却し、嗜好性飼料原料を調製した。次いで得られた嗜好性飼料原料9.1重量部を、市販の哺乳期子豚用飼料(商品名「スーパービグミルクこなっ子」、株式会社科学飼料研究所製)90.9重量部に添加混合して試験飼料を調製した。得られた試験飼料と前記市販の哺乳期子豚飼料のみからなる対照飼料とを、両方自由に食べられるように設置し、供試子豚(平均体重6. *

*0kg)2頭にカフェテリア方式で6日間(1.5kg/日)給餌して、残量及びこぼし量を差し引いた摂取量を測定した。この際、試験飼料と対照飼料との水分含有量は同一とし、また試験飼料と対照飼料との設置場所を1日ごと交換した。その結果を表2に示す。

【0021】

【比較例2】実施例2の試験飼料において、ブドウ果汁を添加混合しない以外は同様に嗜好性飼料原料を調製し、得られた嗜好性飼料原料9.1重量部を実施例1と同様にして、市販の哺乳期子豚用飼料(商品名「スーパービグミルクこなっ子」、株式会社科学飼料研究所製)90.9重量部に添加混合して比較試験飼料を調製した。得られた比較試験飼料について、実施例2と同様に摂取量を測定した。その結果を表2に示す。

【0022】

【表2】

	対照飼料 A (g/頭・日)	試験飼料 B (g/頭・日)	B/A
実施例 2	70 ± 37	392 ± 41***	5.6
比較例 2	148 ± 114	288 ± 85*	1.9

* P<0.05, *** P<0.001

【0023】表2の結果から明らかとなり、比較試験飼料に比べて、本発明の嗜好性飼料原料を含む試験飼料は、嗜好性が顕著であり、摂取量が多かった。

【0024】

【比較例3】5倍濃縮ブドウ果汁(商品名「1/5濃縮ブドウ果汁」、ウェルチ株式会社製)2.5重量部を、市販の哺乳期子豚用飼料(商品名「スーパービグミルクこなっ子」、株式会社科学飼料研究所製)99.5重量部に添加混合して比較試験飼料を調製した。得られた比較試験飼料と前記市販の哺乳期子豚飼料のみからなる対照飼料とを、両方自由に食べられるように設置し、供試

子豚(平均体重6.2kg)2頭にカフェテリア方式で2日間(1kg/日)給餌して、残量及びこぼし量を差し引いた摂取量を測定した。この際、比較試験飼料と対照飼料との水分含有量は同一とし、また比較試験飼料と対照飼料との設置場所を1日ごと交換した。その結果、比較試験飼料の摂取量は、167 ± 10g/頭・日であり、対照飼料の摂取量は119 ± 12g/頭・日であった。この際(比較試験飼料/対照飼料) = 1.4であった。この結果、発酵乳を含まないブドウ果汁のみを含む比較試験飼料の嗜好性は、対照飼料に比して顕著なものでないことが判った。